

Data Collection

Part II

Module 7

**ESC Cost Core Training
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How to Collect & Analyze Data From

Contracts
Contractor Proposals
Cost Reports

Data From Contracts

- Summary information
- What work is the Contractor required to do?
- What data is the Contractor required to deliver?
- Technical specifications

Summary Information

- Type of Contract
- Target Cost & Target Price
- Contract Line Item Structure (CLINs)

What Work Is the Contractor Required to Do?

The Statement of Work (SOW)

What Data is the Contractor Required to Deliver?

Contract Data Requirements List (CDRL)

- Test Evaluation Master Plan (TEMP)
- Systems Engineering Management Plan (SEMP)
- WBS Dictionary
- CPR, CSSR or CCDR, etc.
- Integrated Master Plan (IMP)
- Integrated Master Schedule (IMS)

Technical Specifications

- A copy of the preliminary or final specifications is also part of the contract.
 - Type A Specification
 - Type B Specification
 - Type C Specification

Contract Price Information

- CLIN Prices
- TBDs
- Mapping
- Contract Prices

Data From Contractor Proposals

- The Procurement Environment
- Exactly What Information From Where
- Labor, Overhead and G&A Rates

The Procurement Environment

- Competitive
- Sole Source
- Proposal Evaluations

Exactly What Information From Where

- Contractor WBS
- Subcontracting Plans
- Trend Information

Labor, Overhead and G&A Rates

- Use only approved rates
- Rates change
 - Changing skill mixes
 - Business base

Data From Cost Reports

Primary Cost Reports

- Contractor Funds Status Reports (CFSRs)
- Contractor Cost Data Reports (CCDRs)
- Cost Performance Reports (CPRs)
- Cost/Schedule Status Reports (CSSRs)

Before Using Any Cost Report Data

- Which contract costs are being reported?
- How many contracts?
- Prime vs. subcontracted
- Which portions of the contract?
- WBS Definitions
- Other terms
- Quantities

Contract Funds Status Reports (CFSRs)

- A budget report usually ordered on all contracts (other than Firm Fixed Price) valued over \$1,300,000 (FY2000 constant dollars) & a duration longer than 6 months.
- Submitted quarterly.
- Presents funding information such as appropriations, obligations, expenditures, and funding requirements.

Contract Cost Data Reports (CCDRs)

- Mandatory for all Acquisition Category I (ACAT I) programs, even Firm Fixed Price (FFP) contracts
- ACAT I - CCDR Category I procedures
- ACAT II, III & IV - Category II procedures

CCDR Formats

- Cost Data Summary Report
- Functional Cost-Hour Report
- Progress Curve Report
- Plant-Wide Data Report

How Reliable Is CCDR Data?

- Reliable IF VERIFIED
- “Watch Areas”
 - Non-recurring and Recurring Data
 - Functional Labor Categories
 - Standard WBS Terminology

The Bottom Line on CCDR Data

- Only the Contractor's accounting system is the primary source of data.
- Best time to visit the Contractor's plant is at the start of the contract.

Cost Performance Reports (CPRs)

- Current period or month information
- Uses Contractor's functional categories
- Includes a Baseline Report
- Includes a Manpower Loading Report

Cost Performance Reports (CPRs) & Cost/Schedule Status Reports (CSSRs)

- Usually monthly
- Cumulative cost & schedule status information measured by individual WBS element
- Includes a narrative, analyzing the Program status or problems

Earned Value Management (EVM): CPRs vs. CSSRs

- CPRs are the primary reports required on contracts requiring EVM compliance.
- CSSRs are called out on smaller contracts not specifically requiring EVM compliance.

4 Main Types of Information From CPRs & CSSRs

1. Contract costs and schedule performance
2. Actual costs incurred by month, by WBS item, and in total
3. Government Estimates-at-Completion
4. Is the Contractor behind schedule according to the Contractor's own plan?

Contract Cost and Schedule Performance

Terminology

- **BCWS** (Budgeted Cost of Work Schedule)
- BCWP (Budgeted Cost of Work Performed)
- ACWP (Actual Cost of Work Performed)

Contract Cost and Schedule Performance

(cont'd)

Terminology

- BCWS (Budgeted Cost of Work Schedule)
- **BCWP** (Budgeted Cost of Work Performed)
- **ACWP** (Actual Cost of Work Performed)

BCWS vs. BCWP vs. ACWP

Cum BCWS = \$400K

Cum BCWP = \$250K

Cum ACWP = \$400K

- Is the Contractor on schedule, behind or ahead?
- Is the Contractor on cost, over cost or under cost?

Another Example

Cum BCWS = \$500K

Cum BCWP = \$500K

Cum ACWP = \$400K

- Is the Contractor on schedule, behind or ahead?
- Is the Contractor on cost, over cost or under cost?

Schedule Variance

BCWS vs. BCWP

On-Schedule : BCWS =
BCWP

Behind : BCWP <
BCWS

Ahead : BCWP >
BCWS

Cost Variance

ACWP vs. BCWP

On Cost : ACWP =
BCWP

Over Cost : ACWP >
BCWP

Under Cost : ACWP <
BCWP

Other Terminology

- BAC
- LRE
- EAC
- Management Reserve

Budgeted Cost of Work Remaining (BCWR)

. . . is the total planned cost less the planned cost of the work actually performed

$$\text{BCWR} = \text{BAC} - \text{Cum BCWP}$$

The Importance of Mapping

...when developing an EAC

...if using CPR data in an analogy

...if developing an historical database from CPRs

...in obtaining actual contract costs by WBS element

Special “Watch Areas” When Obtaining Data From CPRs & CSSRs

- Mapping of Contractor data into WBS needs to be verified
- EVM acceptance is not sufficient
- Possible noncompliance with EVM criteria
- Unrealistic front-loading of BCWS

The Best Way to Estimate Cost at Completion

- Be aware of cost and schedule performance to-date
- Problem analysis - how does the Contractor explain the problem?
- Continue to use other methodologies

The Best Way to Estimate Cost at Completion (continued)

- On initial production contracts
- Adjustments for cost and schedule performance to-date

EVM Formula-based EAC Concept

EAC = Cost to Date + Estimate to Complete

$$EAC = ACWP + \left[\frac{\text{Work Remaining}}{\text{Performance Factor}} \right]$$

$$EAC = ACWP + \left[\frac{BAC - BCWP}{\text{Performance Factor}} \right]$$

EVM Formula-based EAC Methods Performance Factors

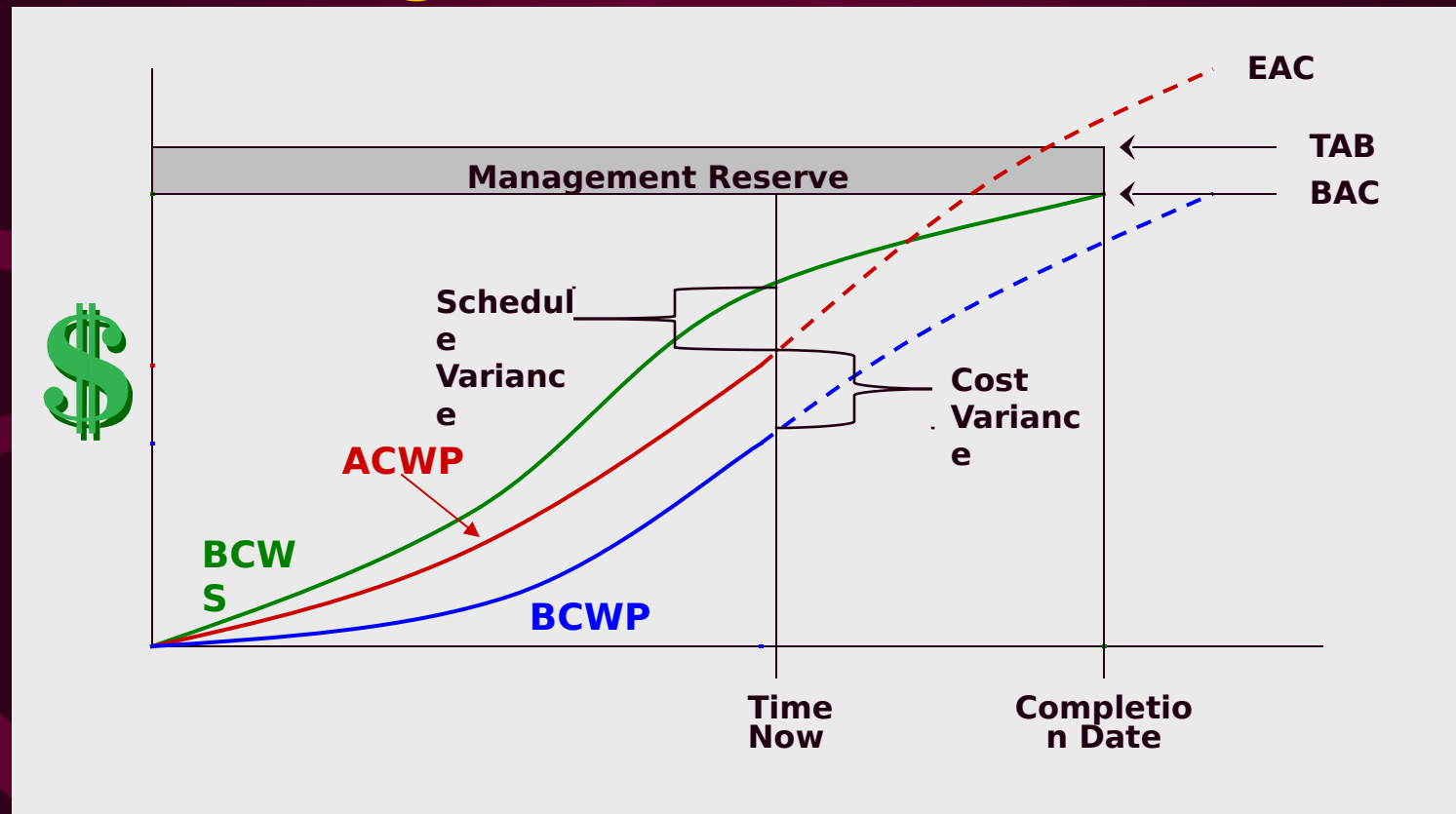
- Cost Performance Index -- CPI
 - Measures cost efficiency
 - $CPI = BCWP/ACWP$
- Schedule Performance Index -- SPI
 - Measures schedule efficiency
 - $SPI = BCWP/BCWS$

Method	Formula
1. Cum CPI (EAC_{CPI_c})	$\frac{ACWP_c}{CPI_c} \left\{ + \frac{BAC - BCWP_c}{CPI_c} \right\} =$
2. Composite EAC	$ACWP_c + \frac{BAC - BCWP_c}{CPI_c \times SPI_c}$
3. 3 Period AVG*	$ACWP_c + \frac{BAC - BCWP_c}{CPI_{3period}}$
4. Cost & Schedule	$ACWP_c + \frac{BAC - BCWP_c}{.8CPI_c + .2SPI_c}$

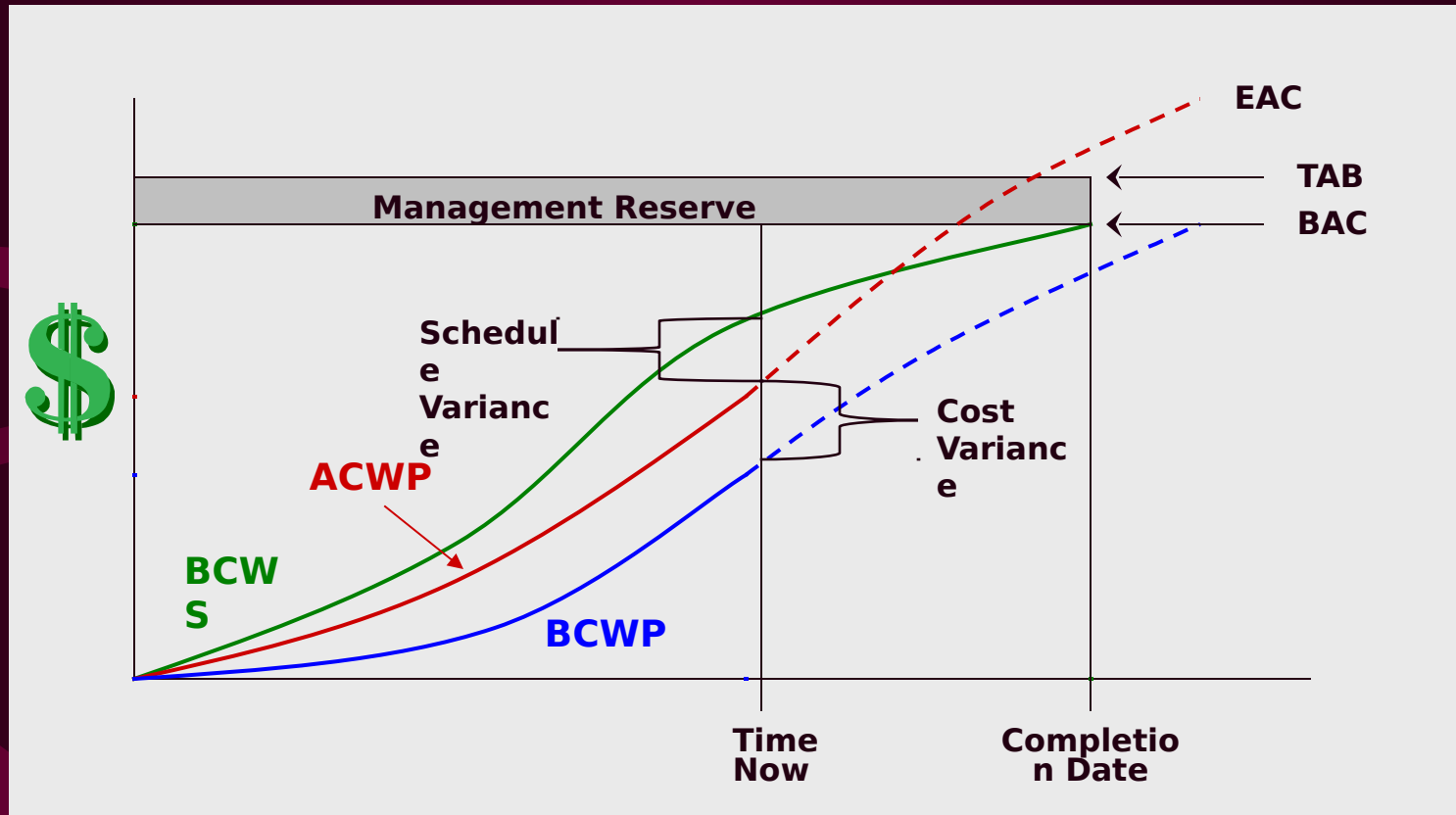
Note: c = cumulative data

* "3 Period AVG" is the average of the last 3 months. One can also use Current CPI or 6 period CPI in place of 3 period CPI.

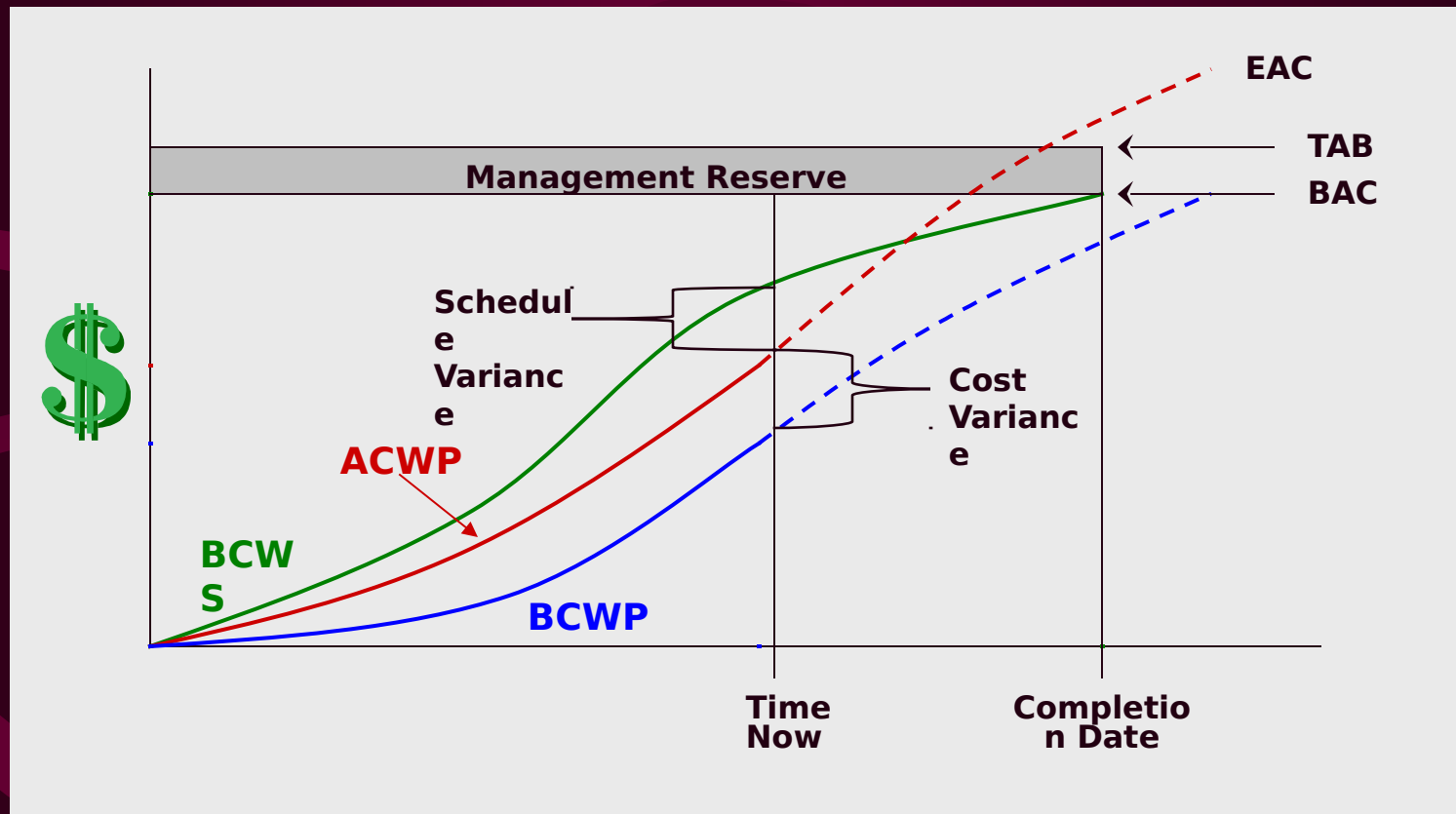
Defense Systems Management College Earned Value Management Gold Card



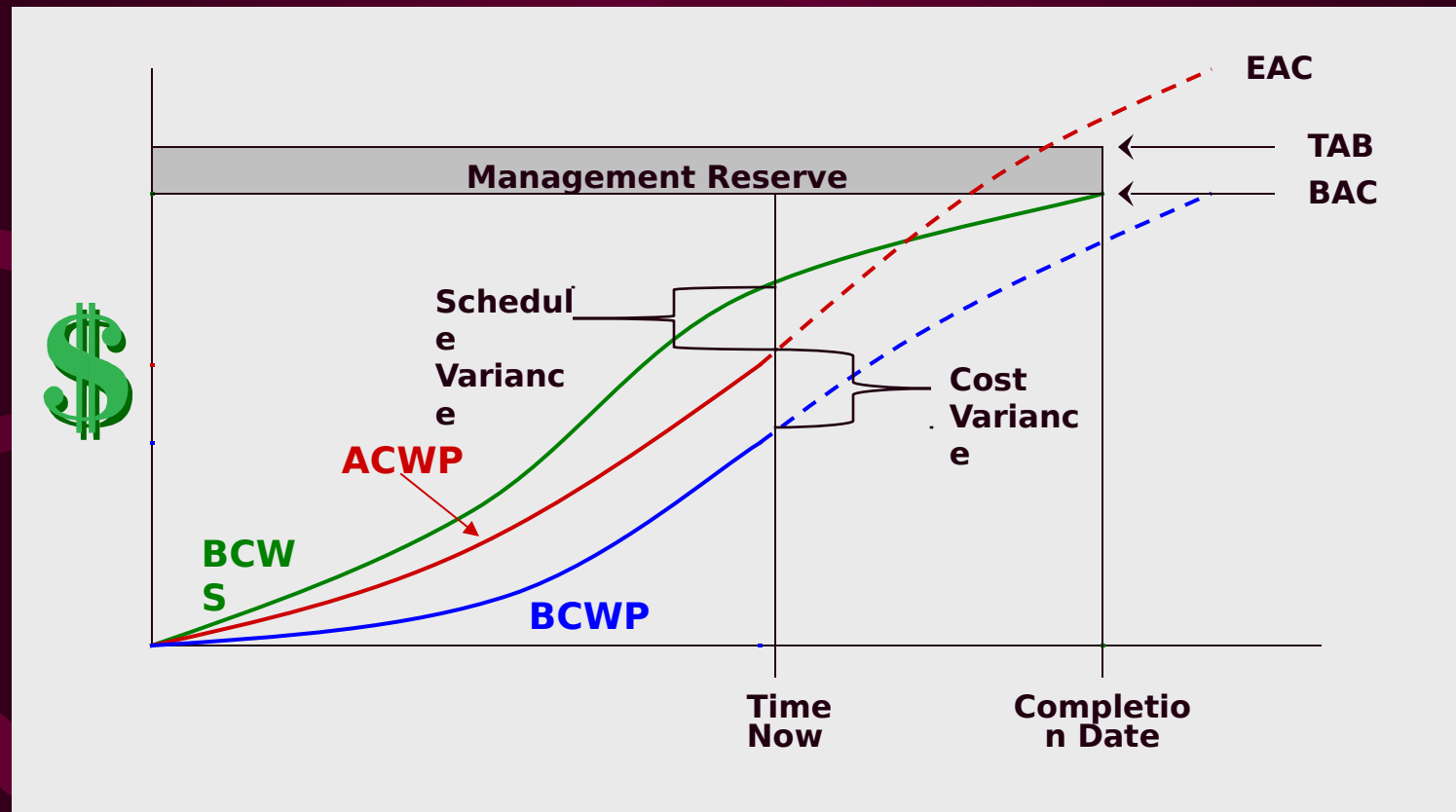
Variances



Performance Indices



Overall Status



To Complete Performance Index and Estimate at Completion

